
XVII. *Biographical Account of the late JOHN ROBISON, LL. D.*
F. R. S. EDIN. and *Professor of Natural Philosophy*
in the University of Edinburgh. By JOHN PLAYFAIR,
F. R. S. L. & E. &c.

(*Read 20th February 1815.*)

THE distinguished person who is the subject of this memoir, was born at Boghall, in the parish of Baldernock, near Glasgow, in the year 1739. His father, JOHN ROBISON, had been early engaged in commerce in Glasgow, where, with a character of great probity and worth, he had acquired considerable wealth, and, before the birth of his son, had retired to the country, and lived at his estate of Boghall.

His son was educated at the grammar school of Glasgow. We have no accounts of his earliest acquirements, but must suppose them to have been sufficiently rapid, as he entered a student of Humanity, in the University of Glasgow, in November 1750, and in April 1756 took his degree in Arts.

Several Professors of great celebrity adorned that University about this period. Dr SIMSON was one of the first geometers of the age; and Mr ADAM SMITH had just begun to explain in his lectures those principles which have since been de-

livered with such effect in the *Theory of Moral Sentiments*, and in the *Wealth of Nations*. Dr MOORE was a great master of the Greek language, and added to extensive learning a knowledge of the ancient geometry, much beyond the acquirement of an ordinary scholar.

Under such instructors, a young man of far inferior talents to those which Mr ROBISON possessed, could not fail to make great advancement. He used, nevertheless, to speak lightly of his early proficiency, and to accuse himself of want of application, but from what I have learnt, his abilities and attainments were highly respected by his cotemporaries, and he was remarked at a very early period for the ingenuity of his reasonings, as well as the boldness of his opinions. According to his own account, his taste for the accurate sciences was not much excited by the pure Mathematics, and he only began to attend to them, after he discovered their use in Natural Philosophy.

In the year following that in which he took his degree, Dr DICK, who was joint Professor of Natural Philosophy with his father, died, and Mr ROBISON offered himself to the old gentleman as a temporary assistant. He was recommended, as I have been told, by Mr SMITH, but was nevertheless judged too young by Mr DICK, as he was not yet nineteen. The object to which his father, a man of exemplary piety, wished to direct his future prospects, was the Church, to which, however, he was at this time greatly averse, from motives which do not appear; but certainly not from any dislike to the objects or duties of the Clerical Profession. It was very natural for him to wish for some active scene, where his turn for Physical, and particularly Mechanical Science, might be exercised, and the influence of those indefinite and untried objects, which act so powerfully on the imagination
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of youth, directed his attention toward London. Professor DICK and Dr SIMSON joined in recommending him to Dr BLAIR, Prebendary of Westminster, who was then in search of a person to go to sea with EDWARD, Duke of York, and to assist his Royal Highness in the study of Mathematics and Navigation. When Mr ROBISON reached London in 1758, he learnt that the proposed voyage was by no means fixed, and after passing some time in expectation and anxiety, he found that the arrangement was entirely abandoned. This first disappointment in a favourite object could not fail to be severely felt, and had almost made him resolve on returning to Scotland.

He had been introduced, however, to Admiral KNOWLES, whose son was to have accompanied the Duke of YORK, and the Admiral was too conversant with Nautical Science, not to discover in him a genius strongly directed to the same objects. Though the scheme of the Prince's nautical education was abandoned, the Admiral's views with respect to his son remained unaltered, and he engaged Mr ROBISON to go to sea with him, and to take charge of his instruction. From this point it is, that we are to date his nautical as well as scientific attainments.

About the middle of February 1759, a fleet sailed from Spithead under the command of Admiral SAUNDERS, intended to co-operate with a military force which was to be employed, during the ensuing summer, in the reduction of Quebec. Young KNOWLES, whom Mr ROBISON had agreed to accompany, was a midshipman on board the Admiral's ship, the *Nep- tune* of 90 guns; but in the course of the voyage, being promoted to the rank of Lieutenant in the *Royal William* of 80 guns, Mr ROBISON went with him on board that ship, and was there rated as a midshipman.

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The fleet arrived on the coast of America in April; but it was not till the beginning of May that the entire dissolution of the ice permitted it to ascend the River St Lawrence, and that the active scene of naval and military operations commenced, which terminated so much to the credit of the British arms. A person whose seafaring life was to be limited to two years, may well be considered as fortunate, in witnessing, during that short period, a series of events so remarkable as those which preceded and followed the taking of Quebec. Though great armies were not engaged, much valour and conduct were displayed; the leaders on both sides were men of spirit and talents; and, on the part of the English, the most cordial co-operation of the sea and land forces was worthy of men animated by the spirit of patriotism, or the love of glory; the fate also of the gallant Leader, who fell in the moment of victory, and in the prime of life, by repressing the exultation of success, gave a deeper interest to the whole transaction.

Of the operations of this period Mr ROBISON was by no means a mere spectator. A hundred seamen, under the command of Lieutenant KNOWLES, were drafted from the Royal William into the Stirling Castle, the Admiral's ship. Mr ROBISON was of this party, and had an opportunity of seeing a great deal of active service. At this time, also, he was occasionally employed in making surveys of the river and the adjacent grounds; a duty for which he was eminently qualified, both by his skill as a mathematician, and his execution as a draughtsman.

It is, however, much to be regretted, that his papers, whether memorandums or letters, give no account of the incidents of this period; so that we are left to conclude, from the history of the times, what were the events in which he must have taken,

ken part, or to gather, from the imperfect recollection of his conversation, the scenes in which he was actually engaged. I have heard him express great admiration at the cool intrepidity which he witnessed, when the fire-ships, sent down the stream against the English navy, at anchor in the river, seemed to present a wall of fire, extending from one bank to another, from which nothing that floated on the water could possibly escape. Without the smallest alarm or confusion, the British sailors assailed this flaming battlement in their boats, grappled the ships which composed it, and towed them to the shore, where they burnt down quietly to the water's edge.

An anecdote which he also used to tell, deserves well to be remembered. He happened to be on duty in the boat in which General WOLFE went to visit some of his posts, the night before the battle, which was expected to be decisive of the fate of the campaign. The evening was fine, and the scene, considering the work they were engaged in, and the morning to which they were looking forward, sufficiently impressive. As they rowed along, the General, with much feeling, repeated nearly the whole of GRAY's Elegy, (which had appeared not long before, and was yet but little known,) to an officer who sat with him in the stern of the boat; adding, as he concluded, that "he would prefer being the author of that poem to the "glory of beating the French to-morrow."

To-morrow came, and the life of this illustrious soldier was terminated, amid the tears of his friends, and the shouts of his victorious army. Quebec fell of course; and soon afterwards the fleet under Admiral SAUNDERS, sailed for England. When they arrived on the coast, they were informed that the Brest fleet was at sea, and that Sir EDWARD HAWKE was in search of it. Without waiting for orders, Admiral SAUNDERS sailed to reinforce HAWKE, but came too late, the celebrated victory
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over CONFLANS, in Quiberon Bay, having been obtained (on the 20th of November) a few days before he joined. Whether the Royal William accompanied the rest of the fleet on this occasion, I have not been able to learn. The body of General WOLFE was brought home in that ship, and was landed at Spithead, on the 18th of November. From that date to the beginning of next year, I find nothing concerning the Royal William, when that ship, with the Namur and some others, under the command of Admiral BOSCAWEN, sailed on an expedition to the Bay of Quiberon. On this service the Royal William remained between five and six months, having been twice sent to cruise off Cape Finisterre, for five weeks each time.

About this period, a series of letters from Mr ROBISON to his father begins; and though the letters do not enter much into particulars, they leave us less at a loss about the remaining part of his seafaring life.

On the 3d of August the Royal William returned to Plymouth, the greater part of the crew being totally disabled by the sea-scurvy, from which Mr ROBISON himself had suffered very severely. He writes to his father, that, out of seven hundred and fifty able seamen, two hundred and eighty-six were confined to their hammocks, in the most deplorable state of sickness and debility, while one hundred and forty of the rest were unable to do more than walk on deck. This circumstance strongly marks, to us, who have lately witnessed the exertions of British sailors, in the blockade of Brest, and other ports of the enemy, the improvement made in the art of preserving the health of seamen within the last fifty years. The Royal William, notwithstanding the state of extreme distress to which her crew was reduced, by a continuance at sea, of hardly six months, was under the command of Captain HUGH
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PiGOTT, one of the most skilful officers of the British navy. Mr ROBISON, indeed, never at any time mentioned his name without praise, for his knowledge of seamanship, and the address with which he used to work the ship, in such bad weather, as rendered her almost unmanageable to the other officers. The art of preserving the health of the seaman, is a branch of nautical science which had at that time been little cultivated. Our great Circumnavigator had not yet shewn, that a ship's crew may sail round the globe, with less mortality than was to be expected in the same number of men, living for an equal period in the most healthful village of their native country.

Mr ROBISON's letters to his father, about this time, are strongly expressive of his dislike to the sea; and of his resolution to return to Glasgow, and to resume his studies, particularly that of Theology, with a view of entering into the Church. These resolutions, however, were for the present suspended, by a very kind invitation from Admiral KNOWLES, to come and live with him in the country, and to assist him in his experiments: "Thus, (says the Admiral), we shall be useful to one another." What these experiments were, is not mentioned, but they probably related to ship-building, a subject which the Admiral had studied with great attention. Mr ROBISON, accordingly, continued to enjoy a situation, and an employment, that must, both, have been extremely agreeable to him, till the month of February in the year following, when Lieutenant KNOWLES was appointed to the command of the Peregrine sloop of war, of 20 guns. Whether the plan of nautical instruction, which Mr ROBISON proposed for his pupil, was not yet completed, or whether he had, after all, come to a resolution of pursuing a seafaring life, (of which there is an appearance in some of his letters), he embarked in the Pere-

grine, and he even mentions his hopes of being made purser to that ship. The first service in which Captain KNOWLES was employed, was to convoy the fleet to Lisbon. In a letter from Plymouth, where they were forced in by the weather, Mr ROBISON paints, in strong colours, the difference between sailing in a small ship, like the *Peregrine*, and a first rate, like the *Royal William*, and the uncomfortable situation of all on board, during a gale which they had experienced in coming down the Channel. The voyage, however, gave him an opportunity of visiting Lisbon, on which the traces of the Earthquake were yet deeply imprinted; and the ship continuing to cruise off the coast of Spain and Portugal, he had occasion to land at Oporto, and other places on the Portuguese coast. In the month of June he returned to England; and from this time quitted the navy, though he did not give up hopes of preferment. He returned, to live with Admiral KNOWLES, and in the end of the same summer, was recommended by him to Lord ANSON, the First Lord of the Admiralty, as a proper person to take charge of HARRISON'S Time-keeper, which, at the desire of the Board of Longitude, was to be sent, on a trial voyage, to the West Indies.

The ingenious artist just named, had begun the construction of his chronometer, on new principles, as early as the year 1726; and with the fortitude and patience characteristic of genius, had for thirty-five years struggled against the physical difficulties of his undertaking, and the still more discouraging obstacles which the prejudice, the envy, or the indifference of his cotemporaries, seldom fail to plant in the way of an inventor. Notwithstanding all these, he had advanced constantly from one degree of perfection to another, and it was his fourth time-keeper, reduced to a portable size, and improved in all other

other respects, that was now submitted to examination. It was intended that Mr ROBISON should accompany young HARRISON and the time-keeper, in a frigate, the Deptford, to Port Royal in Jamaica, in order to determine, on their landing, the difference of time, as given by the watch, and as found by astronomical observation. The time-keeper, accordingly, was put into the hands of Mr ROBERTSON, of the Naval School at Portsmouth, who determined its rate, from nine days that it remained in his custody, to be $2\frac{2}{3}^{\text{sec.}}$ slow, per day, and also, the error to be $3^{\text{sec.}}$ slow, on the 6th of November, at noon, according to mean solar time.

The Deptford sailed on the 18th of November, and arrived at Port Royal on the 19th of January; on the 26th, Mr ROBISON observed the time of noon, and found it to answer to $4^{\text{h}} 59^{\text{m}} 7\frac{1}{2}^{\text{sec.}}$ by the watch, and this being corrected for the error of three seconds, and also for the daily accumulation of $2\frac{2}{3}^{\text{sec.}}$ for eighty-one days five hours, the interval between the observations, the difference of longitude between Portsmouth and Port Royal came out $5^{\text{h}} 2^{\text{m}} 47^{\text{sec.}}$: only four seconds less than it was known to be from other observations.

The instructions of the Board farther required, that, as soon as an opportunity could be found, the same two gentlemen should return with the watch to Portsmouth, that, by a comparison of it with the time there, the total error, during both voyages, might be ascertained. The opportunity of return occurred sooner than they had any reason to expect; for the Spanish war having now broke out, an alarm of an invasion of Jamaica from St Domingo, occasioned the Governor to dispatch the Merlin sloop of war to England, to give intelligence of the danger. Mr ROBISON and Mr HARRISON obtained leave to return in the Merlin, and sailed on the 28th, having been but a few days in Jamaica. This voyage was an

epitome of all the disasters, short of shipwreck, to which seafaring men are exposed. They experienced a continuation of the most tempestuous weather, and the most contrary winds, from the moment they quitted the Bahamas, till they arrived at Spithead. To add to their distress, the ship sprung a great leak, three hundred leagues from any land, and it required the utmost skill and exertion to keep her from sinking. In a terrible gale, on the 14th of March, their rudder broke in two, so that they could no longer keep the ship's head to the wind, and if the gale had not speedily moderated, they must inevitably have perished. When the voyage was near a conclusion, and they were congratulating themselves on the end of their troubles, the ship was found to be on fire, and the flames were extinguished with great difficulty. They reached Portsmouth on the 26th of March, and on the 2d of April the mean noon by the watch was found to be at $11^{\text{h}}.51^{\text{m}}.31\frac{1}{2}\text{sec}$, and, making correction for the error and rate, this amounted to $11^{\text{h}}.58^{\text{m}}.6\frac{1}{2}\text{sec}$, so that the whole error, from the first setting sail, was only $1^{\text{m}}.53\frac{1}{2}\text{sec}$, which, in the latitude of Portsmouth, would not amount to an error, in distance, of twenty miles.

When Mr ROBISON undertook the voyage to Jamaica, he made no stipulation for any remuneration, and Lord ANSON assured him, that he should have no reason to repent the confidence which he placed in the Board. But when, on his return, he came to look for the reward, to which the success and trouble of the undertaking certainly entitled him, he soon found that he had greatly erred, in leaving himself so much at the mercy of unforeseen contingencies. Lord ANSON was ill of the disease of which he died, and was not in a condition to attend to business. Admiral KNOWLES was disgusted with the Admiralty, and with the Ministry, by which he thought himself ill-used; so that Mr ROBISON had nothing to look for from
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personal kindness, and could trust only to the justice and moderation of his claims. These were of little advantage to him; for such was the inattention of the Lords of the Admiralty, and the Members of the Board of Longitude, that he could not obtain access to any of them, nor even receive from them any answer to his memorials.

The picture which his letters to his father present, at this time, is that of a mind suffering severely from unworthy treatment, where it was least suspected. Men in office do not reflect, while they are busy about the concerns of nations, how much evil may be done by their neglect to do justice to an individual. They may be extinguishing the fire of genius, thrusting down merit below the level it should rise to, or prematurely surrounding the mind of a young man; with a fence of suspicion and distrust, worse than the evils which it proposes to avert. Like other kinds of injustice, this may, however, meet with its punishment; though the victim of unmerited neglect may remain for ever obscure, and his sufferings for ever unknown, he may also emerge from obscurity, and the treatment he has met with may meet the eye of the public. It is probable that the member of these Boards most conspicuous for rank or for science, would not have been above some feeling of regret, if he had learnt that the young man whose petitions he disregarded, was to become the ornament of his country, and the ill treatment he then met with, a material fact in the history of his life.

But though we must condemn the neglect of which Mr ROBISON had so much reason to complain; we do by no means regret that the recompense, which he or his friends had in view, was not actually conferred on him. This was no other than an appointment to the place of a purser in a ship of war; a sort of preferment which, to a man of the genius, information,
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and accomplishment of Mr ROBISON, must have turned out rather as a punishment than a reward. It was, however, the object which, by the advice of Sir CHARLES KNOWLES, he now aspired to ; and, indeed, he had done so, ever after his first voyage in the Royal William ; for it appears that he had wished to be made Purser to the *Peregrine*, at the time when Lieutenant KNOWLES was appointed to the command of that ship, though, considering its smallness, the situation could have been attended with little emolument*.

Thus disappointed in his hopes, Mr ROBISON resolved on returning to Glasgow, in order to qualify himself for entering into the Church. Indeed, the idea of prosecuting his original destination seems often to have occurred to him, even when his views appeared to have a very different direction. When he left the Royal William in 1761, he was not without serious intentions of resuming the study of Theology. This appears, both from a letter he wrote to his father, about that time, and from one which he himself received from young KNOWLES, who rallies him on his new profession, and on the singularity of having acquired a taste for theological studies in the ward-room of a man of war. When he undertook the voyage to Jamaica, he would have wished to have had the patronage of his employers, for obtaining some ecclesiastical preferment rather than

* It is, however, true, that the place of Purser was afterwards offered to Mr ROBISON, but such a one as he could have no temptation to accept. In 1763, when Lord SANDWICH was First Lord of the Admiralty, his solicitations were so far listened to, that he was appointed to the *Aurora*, of 40 guns, then on the stocks. As the ship must be long of being in commission, and the pay of the Purser, in the mean time, very inconsiderable, Mr ROBISON declined accepting this appointment.

than naval; and only agreed to the latter, as it lay more in the way of the Board of Longitude to help one to promotion in the Navy than in the Church. It appears, that he had never ceased to express to Dr BLAIR a desire of assuming the clerical character; and he actually had, from that gentleman, the offer of a curacy in a living of his own, to which, however, the emolument annexed was so small, that, after consultation with his father, he declined accepting of it.

But however Mr ROBISON's views may have varied, to one object he steadily adhered, viz. the cultivation of science, and the acquisition of whatever knowledge the situations he was placed in brought within his reach.

He returned, therefore, to Glasgow; and a man whose object was the prosecution of science, could not arrive at any place in a more auspicious moment, as that city was about to give birth to two of the greatest improvements, which, in the eighteenth century, have distinguished the progress either of the sciences or the arts. The one of these was the discovery of Latent Heat, by the late Dr BLACK; the other, was the invention of what may be properly called a New Steam-engine, by Mr WATT. The former of these eminent men was then the Lecturer on Chemistry in the University, and had just been led, by a train of most ingeniously contrived experiments, to the knowledge of a principle which seemed to promise better for an explanation of the process which takes place when heat is communicated to bodies, than any thing yet known in chemistry, viz. that when water passes from a solid to a fluid state, as much of its heat disappears, as would have raised its temperature, had it remained solid, 140 degrees higher than that which it actually possesses. Mr ROBISON was already known to Dr BLACK, having been introduced to
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him before he left Glasgow ; but at that time he had not studied chemistry, to which, however, he was now bending his attention. He had the advantage of being initiated in it by the author of the discovery just mentioned, and the new views struck out by his master, did not fail to interest him in a study, which, from that time, came to occupy a new place in physical science.

Mechanics had always been his favourite pursuit, and his turn to whatsoever was connected with it, had brought him to be acquainted with Mr WATT before 1758, when he left the University. Mr WATT, who, at that time, exercised the profession of a mathematical instrument maker, was employed in fitting up the astronomical instruments bequeathed to the Observatory by the late Dr MACFARLANE of Jamaica. Mr ROBISON, on his return, found him still residing in Glasgow, and exercising the same profession, and their former intimacy was naturally renewed. In 1764, an occurrence such as to an ordinary man would have been of no value, gave rise to the improvement of the steam-engine. A model of the common engine, NEWCOMEN'S, which belonged to the Natural Philosophy Class, was put into Mr WATT'S hands in order to be repaired. As the model worked faster than the large engines, it was found impossible to supply it with steam, and it was in the attempt to obviate this difficulty, and in trying to produce a more perfect vacuum, that the idea of condensing the steam in a separate vessel first occurred to him. At the same time, by a curious coincidence, his experiments led him to conclusions concerning the great quantity of heat contained in steam, that were only to be explained on the principle of latent heat. Mr ROBISON lived in a state of great intimacy with Mr WATT, and was so much acquainted with the first steps of this invention, that his evidence on the subject of the originality

originality of it, was afterwards of great use in ascertaining the justness of his claim.

There could not be a better school for philosophical invention than Mr ROBISON enjoyed at this time, and accordingly, he used always to say, that it was not till his second residence at Glasgow that he applied to study with his whole mind.

Dr BLACK was elected Professor of Chemistry in the University of Edinburgh in the summer of 1766; and, on leaving Glasgow, recommended Mr ROBISON as his successor. He was accordingly made choice of, and began his first course of chemical lectures in October 1766. He was appointed for one year only, but his success assured his continuance without any other limit than such as depended on himself.

He had also the charge of the education of the late Mr MACDOWAL of Garthland, and of Mr CHARLES KNOWLES, a son of the Admiral. But of the particulars, during four years, about this time, I have been able to obtain little information.

The friendship of Admiral KNOWLES had been all along exerted toward Mr ROBISON, with an extraordinary degree of zeal and assiduity, and was now the means of procuring for him a very unlooked-for preferment, which removed him from his academical duties at Glasgow. The Empress of Russia, convinced of the importance of placing her marine on the best footing, made an application to the Government of this country, for permission to engage in her service some of the most able and experienced of our naval officers, to whom she might entrust both the contrivance and the execution of the intended reformation. The request was agreed to, and the person recommended was Admiral Sir CHARLES KNOWLES, who had long applied, with great diligence, to the

study of naval architecture, as well as to that of every branch of his profession; and who, about fifty years before, had been sent to Portugal on a similar mission. A proceeding so free from that jealousy which often marks the conduct of great nations no less than the dealings of the most obscure corporations, is particularly deserving of praise. From the first moment that this offer was made to the Admiral, he communicated it to Mr ROBISON, whom he wished to engage as his Secretary, and to whom, as he says in his letters, he looked for much assistance in the duty he was about to undertake. A very handsome appointment was made for Mr ROBISON, and in the end of December 1770, he set out with Sir CHARLES and his family on the journey to St Petersburg, over land.

Admiral KNOWLES held the office of President of the Board of Admiralty; and his intention was, that Mr ROBISON should have the place of Secretary. The Russian Board, however, being constituted more on the plan of the French than the English, there was no place corresponding to that of our Secretary of the Admiralty. Mr ROBISON continued, therefore, in the character of Private Secretary to the Admiral.

During the first year of the Admiral's residence in Russia, and for the greater part of the second, Mr ROBISON remained with him, employed in forming and digesting a plan for improving the methods of building, rigging, and navigating the Russian ships of war, and for reforming, of consequence, the whole detail of the operations in the naval arsenals of that Empire.

These innovations, however, met with more resistance than either the Admiral or his Secretary had permitted themselves to suppose. The work of reform, conducted by a foreigner,
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even when he is supported by despotic power, must proceed but slowly ; jealousy, pride, and self-interest, will continually counteract the plans of improvement, and by their vigilance and unceasing activity, will never wholly fail of success. All this was experienced by Admiral KNOWLES ; yet there is no doubt that material advantages were derived, by the Russian navy, from the new system which he was enabled, partially, to introduce.

Mr ROBISON, from his first arrival at St Petersburg, had applied with great diligence to the study of the Russian language, and had made himself so much master of it, as to speak and write it with considerable facility. In summer 1772, a vacancy happening in the mathematical chair attached to the Imperial Sea Cadet Corps of Nobles, at Cronstadt, Mr ROBISON was solicited to accept of that office. His nautical and mathematical knowledge qualified him singularly for the duties of it, and his proficiency in the Russian language, removed the only objection that could possibly be proposed. When he accepted of the appointment, the salary of his predecessor was doubled, and the rank of Colonel was given him. Besides delivering his lectures as Professor, he officiated also as inspector of the above corps, in the room of General POLITIKA, who had retired, or been sent to his estates in the Ukraine.

The lectures which he gave were very much admired, and could not fail to be of the greatest use to his pupils. Few men understood so well the theory and the practice of the arts they profess to teach ; few had enjoyed the same opportunities of seeing the mathematical rules of artillery and navigation carried into effect on so great a scale. To his own countrymen, resident at Petersburg, Mr ROBISON was an object of no less affection than admiration.

In 1773, the death of Dr RUSSELL produced a vacancy in the Natural Philosophy Chair of the University of Edinburgh. Principal ROBERTSON, who was ever so attentive to the welfare of the University over which he presided, though not personally acquainted with Mr ROBISON, yet knowing his character, had no doubt of recommending him to the Patrons of the University, who, on their part, with no less disinterestedness, listened to his recommendation, and Mr ROBISON was accordingly elected. It is said, that when the news of this appointment reached him, he at first hesitated about the acceptance of it, principally from the fear of appearing insensible to the kindness and favour which he had experienced from the Russian Government. The moment, too, when it was known that this invitation had been given him, further offers of emolument and preferment were made him by that Government, of such a kind as it was supposed he could not possibly resist. At length he determined, and no doubt wisely, however splendid the prospects held out to him might be, to accept of a situation that would fix him permanently in his native country. He therefore declined the offers of the Empress of Russia, and in June 1774 sailed from Cronstadt for Leith, followed, as one of those friends he left behind in Russia has expressed it, by the regrets, and accompanied by the warmest good wishes, not only of all who had shared in his friendship, but of all to whom he was known. The Empress was so far from being offended with his determination, however much she wished to prevent it, that she settled a pension on him, accompanied with a request, that he would receive under his care two or three of the young cadets who were to be selected in succession.

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Mr ROBISON was admitted at Edinburgh the 16th September 1774, and gave his first course of lectures in the winter following. The person to whom he succeeded had been very eminent and very useful in his profession. He possessed a great deal of ingenuity, and much knowledge, in all the branches of Physical Science. Without perhaps being very deeply versed in the higher parts of the mathematics, he had much more knowledge of them than is requisite for explaining the elements of Natural Philosophy. His views in the latter were sound, often original, and always explained with great clearness and simplicity. The mathematical and experimental parts were so happily combined, that his lectures communicated not only an excellent view of the principles of the science, but much practical knowledge concerning the means by which those principles are embodied in matter, and made palpable to sense.

Mr ROBISON, who now succeeded to this chair, had also talents and acquirements of a very high order. The scenes of active life in which he had been early engaged, and in which he had seen the great operations of the nautical and the military art, had been followed, or accompanied, with much study, so that a thorough knowledge of the principles, as well as the practice, of those arts, had been acquired. His knowledge of the mathematics was accurate and extensive, and included, what was at that time rare in this country, a considerable familiarity with the discoveries and inventions of the foreign mathematicians.

In the general outline of his course, he did not, however, deviate materially from that which had been sketched by his predecessors, except, I think, in one point of arrangement, by which
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he passed from Dynamics immediately to Physical Astronomy. The sciences of Mechanics, Hydrodynamics, Astronomy and Optics, together with Electricity and Magnetism, were the subjects which his lectures embraced. These were given with great fluency and precision of language, and with the introduction of a good deal of mathematical demonstration. His manner was grave and dignified. His views always ingenious, and comprehensive, were full of information, and never more interesting and instructive than when they touched on the history of science. His lectures, however, were often complained of, as difficult and hard to be followed, and this did not, in my opinion, arise from the depth of the mathematical demonstrations, as was sometimes said, but rather from the rapidity of his discourse, which was in general beyond the rate at which accurate reasoning can be easily followed. The singular facility of his own apprehension, made him judge too favourably of the same power in others. To understand his lectures completely, was, on account of the rapidity, and the uniform flow of his discourse, not a very easy task, even for men tolerably familiar with the subject. On this account, his lectures were less popular than might have been expected from such a combination of rare talents as the author of them possessed. This was assisted by the small number of experiments he introduced, and a view that he took of Natural Philosophy which left but a very subordinate place for them to occupy. An experiment, he would very truly observe, does not establish a general proposition, and never can do more than prove a particular fact. Hence, he inferred, or seemed to infer, that they are of no great use in establishing the principles of science. This seems an erroneous view. An experiment does but prove a particular

lar fact ; but by doing so in a great number of cases, it affords the means of discovering the general principle which is common to all these facts. Even a single experiment may be sufficient to prove a very general fact. When a guinea and a feather, let fall from the top of an exhausted receiver, descend to the bottom of it in the same time, it is very true that this only proves the fact of the equal acceleration of falling bodies in the case of the two substances just named ; but who doubts that the conclusion extends to all different degrees of weight, and that the uniform acceleration of falling bodies of every kind, may safely be inferred.

A society for the cultivation of literature and science had existed in Edinburgh ever since the year 1739, when, by the advice, and under the direction of Mr MACLAURIN, an association, formed some years before for the improvement of Medicine and Surgery, enlarged its plan, and assumed the name of the Philosophical Society. This Society, which had at different times reckoned among its members some of the first men of whom this country can boast, had published three volumes of Memoirs, under the title of *Physical and Literary Essays* ; the last in 1756, from which time the Society had languished, and its meetings had become less frequent. At the time I am now speaking of, it was beginning to revive, and its tendency to do so was not diminished by the acquisition of Mr ROBISON, who became a member of it soon after his arrival. It had often occurred, that a more regular form, and an incorporation by Royal Charter, might give more steadiness and vigour to the exertions of this learned body. In 1783, accordingly, under the auspices of the late excellent Principal of this University, a Royal Charter was obtained, appointing certain persons
named

named in it as a New Society, which, as its first act, united to itself the whole of the Philosophical.

Professor ROBISON, one of those named in the original charter, was immediately appointed Secretary, and continued to discharge the duties of that office, till prevented by the state of his health several years after.

The first volume of the Transactions of this Society, contains the first paper which Professor ROBISON submitted to the public, a "Determination of the Orbit and the Motion of the "Georgium Sidus, directly from Observations," read in March 1786. This planet had been observed by Dr HERSCHELL on the 13th March 1781, and was the first in the long list of discoveries by which that excellent observer has for so many years continued to enrich the science of Astronomy. Its great distance from the sun, and the slowness of its angular motion, which last amounts to little more than four degrees from one opposition to the next, made it difficult to determine its orbit with tolerable accuracy, from an arch which did not yet exceed an eighteenth part of the whole orbit. This was an inconvenience which time would remedy; but impatience to arrive even at such an approximation as the facts known will afford, is natural in such cases, and Professor ROBISON, as well as several other mathematicians, were not afraid to attempt the problem, even in this imperfect state of the data. It is well known that the observations which best serve the purpose of determining the orbit of a planet, are those made at its oppositions to the sun, when an observer in the Earth and in the Sun would refer the planet to the same point in the starry heavens, or when, in the language of astronomers, its heliocentric and geocentric places coincide. Of these

these oppositions in the case of this planet, there were yet only four which had been actually observed. Dr HERSHELL had, however, discovered the planet soon after the opposition of 1781 was passed, and though of course that opposition was not seen, yet from the observations that were made so soon after, Professor ROBISON thought he could deduce the time with sufficient accuracy. The opposition of the winter 1786 he observed himself; for though there was, unfortunately, no observatory at Edinburgh, he endeavoured to supply that defect on the present occasion by a very simple apparatus, viz. a telescope on an equatorial stand, which served to compare the right ascension and declination of the planet with those of some known stars which it happened to be near. His general solution of the problem is very deserving of praise; and though the method pursued is in its principle the same with all those which ever since the time of KEPLER have been employed for finding the elements of a planetary orbit, it appears here in a very simple form, the construction being wholly geometrical, and easily understood. The elements, as he found them, are not very different from those that have since been determined from more numerous and more accurate observations.

When Dr HERSHEL first made known this most distant of the planets, many astronomers believed that they had discovered the source of those disturbances in our system, which had not yet been explained. Professor ROBISON was of this number; for he tells us, in the beginning of his paper, that he had long thought that the irregularities in the motion of Jupiter and Saturn, which had not been explained by the mutual gravitation of the known planets, were to be accounted for by the action of planets of considerable magnitude, beyond the orbit of Saturn. Subsequent inquiry, however, has not ve-

rified this conjecture ; the irregularities of Jupiter and Saturn have since been fully explained, and are known to arise chiefly from their action on one another, a very small part only being owing to that of the Georgium Sidus, or of any of the other planets.

The next publication of Professor ROBISON, was a paper in the second volume of the same Transactions, “ On the Motion of Light, as affected by Refracting and Reflecting Substances, which are themselves in Motion *.”

The phenomena of the aberration of the fixed stars are well known to depend on the velocity of the earth’s motion combined with the velocity of light ; the quantity of the aberration, when all other things are given, being directly as the first, and inversely as the second. It is not, however, the general or the medium velocity with which light traverses space, but it is the particular velocity with which it traverses the tube of the telescope, that determines the quantity of this aberration. Were it possible, therefore, to increase or diminish that velocity, the aberration would be diminished in the first case, and increased in the second. But, according to the principles now generally received in optics, the velocity of light is increased, when it traverses a denser medium, or one in which the refraction is greater ; and therefore were the tube of a telescope to be filled with water instead of air, the aberration would be diminished. Professor ROBISON, and his friend Mr WILSON, Professor of Astronomy at Glasgow, had speculated much on this subject, and made many attempts to obtain a water telescope, but, hitherto, without effect. A paper of BOSCOVICH on the same subject, seemed to suggest some new views, that might render the experiment more easy to be made. That philosopher maintained,

* *Edinburgh Transactions*, vol. ii. p. 83.

maintained, that in ascertaining the effect of a water telescope on the motion of light, the observation of celestial objects might be dispensed with, and that of terrestrial substituted in its place. He argued, that while light moves with an uniform velocity, the telescope must be directed, not to the point of space which the object occupied when the particle was sent off which is entering the telescope, but to a point advanced before it by a space just equal to that which both the object and the observer have passed over in the time in which the particle has passed from the object to the eye. It is therefore directed exactly to the place which the object is in when the light from it enters the eye. If, therefore, the ray, on entering the telescope, is made to move faster than it did before, the telescope must not be inclined so much, and the apparent place of the object will fall behind its true place. If the ray is retarded on entering the water, the contrary must happen. Hence a number of very unexpected phenomena would result, affording, without having recourse to the heavenly bodies, a direct proof of the motion of the earth in its orbit, as well as a resolution of the question, whether light is accelerated or retarded on passing from a rarer to a denser medium*.

On this reasoning Professor ROBISON has very well remarked, that it would be just, if the light, on entering the water telescope, had only its velocity changed, and not its direction. But this is not the case; for the ray that is to go down the axis of the telescope, is not perpendicular to the surface of the fluid; it makes an angle with it, depending on the aberration, and therefore in some cases less by 20" than a right angle. On this account, the effect is not produced which BOSCOVICH's reasonings lead us to expect.

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* BOSCOVICH, *Opera Math.* tom. II. opusc. 3.

The sequel of the paper is also full of ingenious remarks.

In December 1785, Mr ROBISON was attacked by a severe disorder, which, with but few intervals of relaxation, continued to afflict him to the end of his life, and which, though borne with much resignation, and resisted with singular fortitude, could not but at length impair both the vigour and the continuity of his exertions. The disorder seemed to be situated between the urethra and the perineum. At times it was accompanied with the severest pain, and with violent spasms, which were easily excited. The disease, however, was only known by the pain produced; and never, by any visible or palpable symptom, gave information of its nature, as no change in the parts which were the seat of it could ever be observed. A complaint of this nature, it is evident, must have less chance of being removed than any other, and it accordingly baffled the art of the most skilful medical men, both in Edinburgh and London.

Notwithstanding this state of suffering, his general health was not for a long time materially injured, nor the powers of his mind relaxed, so that he continued to prosecute study with vigour and steadiness. A malady which was both severe and chronical, admitted of no palliative so good as the comfort of domestic society, which Mr ROBISON happily enjoyed, having married soon after he settled in Edinburgh. The care and attention of Mrs ROBISON, and the affectionate regards of his children, as they grew up, were blessings to which, with all his habits of study and abstraction, he was ever perfectly alive.

This indisposition did not prevent him from engaging, about this time, in a very laborious undertaking. A work, with the
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title of *Encyclopædia Britannica*, undertaken at Edinburgh several years before this period, was now undergoing a third edition, in which it was to advance from three to eighteen volumes. Twelve of these had been already published, under the direction of the original editor, Mr COLIN MACFARQUHAR, when, on his death, the task of continuing the work was committed to the care of the Reverend Dr GLEIG, and about the same time Professor ROBISON became a contributor to it. He was the first contributor who was professedly and really a man of science, and from that time the *Encyclopædia Britannica* ceased to be a mere compilation. Dictionaries of Arts and Sciences, in this island, had hitherto been little else than compilations; and though in France, the co-operation of some of the most profound and enlightened men of the age, had produced a work of great merit and celebrity, with us compositions of the same class had been committed to the hands of very inferior artists. The accession of Professor ROBISON was an event of great importance in the history of the above publication.

It was in the year 1793 that he began to write in this book, and it was at the article Optics, with him a very favourite science, that his labours commenced. From that time he continued to enrich the *Encyclopædia* with a variety of valuable treatises, till its completion in 1801.

The general merit of the articles thus composed, makes it difficult to point out particulars. Those in which theoretical and practical knowledge are combined, are of distinguished merit; such are Seamanship, Telescope, Roof, Water-works, Resistance of Fluids, Running of Rivers. To these I must add the articles Electricity and Magnetism in the Supplement, where the theories of ÆPINUS are laid down with great clearness and precision, as well as with very considerable improvements. In ascertaining the law of the electric attraction, his
experiments

experiments were ingenious, as well as original, and afforded an approximation to the result which the great skill and the excellent apparatus of COULOMB have since exactly ascertained. In the Supplement is also contained a very full account of the Theory of BOSCOVICH; a subject with which he was much delighted, and which he used to explain in his lectures, with great spirit and elegance.

These articles, if collected, would form a quarto volume of more than a thousand pages. I am persuaded, that when brought together, and arranged by themselves, they will make an acceptable present to the public; and I have the satisfaction to state, that such a work is now preparing, under the direction of an Editor whose remarks or corrections cannot but add greatly to its value. Notwithstanding the merit which the separate articles possess, they are not entirely free from the faults incident to whatever is composed for a work already in the press. The condensation and arrangement, to which time is such an essential condition, even with men of the first talents, must be often wanting, in such circumstances; and there are, accordingly, in the articles now referred to, a diffuseness, and sometimes a want of order, that may easily be corrected, without injuring the authenticity of the work.

Though the Encyclopædia employed Professor ROBISON very much during the whole of the seven years that it continued, he nevertheless found leisure for some researches of a very different nature. At the period of which I now speak, the French Revolution had arrested the attention, and excited the astonishment of all Europe; and the satisfaction with which the first efforts of a nation to assert its liberties, had been hailed from all quarters, was, by the crimes and excesses which followed, quickly converted into grief and indignation. A body was put in motion sufficient to crush whole nations under its weight;

weight; none had the power or the skill to direct its course; what movements it might communicate to other bodies, how far it would go, or in what quarter, it seemed impossible to foretel. The amazement became general; no man was so abstracted from the pursuits of the world, or so insulated by peculiarities of habit and situation, as not to feel the effects of this powerful concussion. All fixed their eyes on the extraordinary spectacle which France exhibited; where, if time is to be measured by the succession of events, a year was magnified into an age; and when in a few months one might behold more old institutions destroyed, and more new ones projected or begun, than in all the ten centuries which had elapsed between CHARLEMAGNE and the last of his successors:—In a word, where the ancient edifice, founded in the ages of barbarism with such apparent solidity, strengthened and adorned in the progress of civilisation with so much skill and labour, was in one moment levelled with the dust. A general state of alarm and distrust was the effect of the convulsions which men saw every where around them; where the institutions held as sacred from their origin, or venerable from their antiquity, and essential to the order of society, were seen, not falling to pieces from natural decay, but blown up by the force of a sudden and unforeseen explosion. From such a condition of the world, jealousy and credulity could not fail to arise. When danger is all around, every thing is of course suspected; and when the ordinary connection between causes and effects cannot be traced, men have no means of distinguishing between the probable and the improbable; so that their opinions are dictated by their prejudices, their impressions, and their fears. Such, accordingly, was the state into which mens minds were brought at this extraordinary crisis; and even in this country, removed, as we were, from the danger, by so strong

strong a barrier of causes, both moral and physical, the alarm was general and indiscriminate. The progress of knowledge was supposed by many to be the cause of the disorder; panegyrics on ignorance and prejudice were openly pronounced; the serious and the gay joined in declaiming against reason and philosophy; and all seemed to forget, that when reason and philosophy have erred, it is by themselves alone that their errors can be corrected.

The fears that had thus taken possession of mens' minds, were often artificially increased. It was supposed that the general safety depended on the general alarm; that the more the terror was extended, the more would the object of it be resisted; and hence, doubtless, many felt it their interest, and some considered it their duty, to magnify the danger to which the public was exposed.

It is evident, that an inquiry into the causes of the French Revolution, undertaken at a moment of such agitation, was not likely to bear the review of times of calm and sober reflection. It was at this moment, however, and under the influence of such impressions, that Mr ROBISON undertook to explain the causes of that revolution. He was deeply affected by the scenes that were passing before him. He possessed great sensibility, and his mind, peculiarly alive to immediate impressions, felt strongly the danger to which the social order of every nation seemed now to be exposed. The crimes which the name of Liberty had been employed to sanction, filled him with indignation, and the contempt of religion, affected by many of the leaders of the Revolution, wounded those sentiments of piety which he had uniformly cherished from his early youth.

In such circumstances, a mind accustomed to inquire into causes, as his had long been, could not abstain from the attempt

tempt to trace the sources of so extraordinary a succession of events. As to the circumstances which first led him, and led him, I think, so unhappily, to look for those sources in the institutions of Free Masonry, or in the combination of some German mystics, I have nothing satisfactory to offer. He was accustomed to refined and subtle speculations, and naturally entertained a partiality for theories that called into action the powers by which he was peculiarly distinguished.

In 1797, he published a book, entitled, "Proofs of a Conspiracy against all the Religions and Governments of Europe." He supposes, that this conspiracy originated in the Lodges of the Free Masons, but that it first assumed a regular form in the hands of certain philosophic fanatics, distinguished in Germany by the name of *Illuminati*; that after the suppression of this society by the authority of Government, the spirit was kept alive by what was called the German Union; that its principles gradually infected most of the philosophers of France and Germany, and lastly broke forth with full force in the French Revolution.

The history of *Illuminatism*, as it is called, forms the principal part of the work; and on a subject involved in great mystery, where all the evidence came through the hands of friends or of enemies, it was exceedingly difficult for one living in a foreign country, and a stranger to the public opinion, to obtain accurate information. Accordingly, the events related, and the characters described, as proofs of the conspiracy, are of so extraordinary a nature, that it is difficult to persuade one's self that the original documents from which Mr ROBISON drew up his narrative were entitled to all the confidence which he reposed in them.

I do not mean to question the general fact, that there did exist in Germany a society having the vanity to assume the

name just mentioned, and the presumption or the simplicity to believe that it could reform the world. In a land where the tendency to the romantic and the mysterious seems so general, that even philosophy and science have not escaped the infection, and in states where there is much that requires amendment, it is not wonderful if associations have been formed for redressing grievances, and reforming both religion and government. Some men, truly philanthropic, and others, merely profligate, may have joined in this combination; the former, very erroneously supposing, that the interests of truth and of mankind may be advanced by cabal and intrigue; and the latter, more wisely concluding, that these are engines well adapted to promote the dissemination of error, and the schemes of private aggrandisement. An ex-Jesuit may have been the author of this plan, and whether he belonged to the former or the latter class, may have chosen for the model of the new arrangement, those institutions which he knew from experience to be well adapted for exercising a strong but secret influence in the direction of human affairs.

In all this there is nothing incredible; but the same, I think, cannot be asserted, when the particulars are examined in detail. It is extremely difficult, as has already been remarked, for a foreigner, in such circumstances as Mr ROBINSON'S, to avoid delusion, or to determine between the different kinds of testimony of which he must make use. With me, who have no access to the original documents, and if I had, who have neither leisure nor inclination to examine them, an opinion can only be formed from the internal evidence, that is, from the nature of the facts, and the style in which they are recorded. The style of the works from which Mr ROBINSON composed his narrative, is not such as to inspire confidence; for, wherever it is quoted, it is that of an angry and inflated

flated invective. The facts themselves are altogether singular, arguing a depravity quite unexampled in all the votaries of *illumination*. From the perusal of the whole, it is impossible not to conclude, that the alarm excited by the French Revolution, had produced in Mr ROBISON a degree of credulity which was not natural to him. The suspicion with which he seems to view every person on the continent, to whom the name of a Philosopher can be applied, and the terms of reproach and contempt to which, whether as individuals or as bodies, they are always subjected, make it evident that the narrative is not impartial, and that the author was prepared, in certain cases, to admit the slightest presumption as clear and irrefragable evidence. When, indeed, he speaks of such obscure men as composed the greater part of the supposed conspirators, we have no direct means of determining in what degree he has been misled. But when we see the same sort of suspicion and abuse directed against the best known and most justly celebrated characters of the age, we cannot but lament the prejudices which had taken possession of an understanding in other matters so acute and penetrating.

Among the men engaged in public affairs, of whom Europe boasted during the last century, there was perhaps none of a higher character than TURGOR, who, to the abilities of a statesman, added the views of a philosopher; was a man singularly patriotic and disinterested, distinguished by the virtues both of public and private life, and having, indeed, no fault but that of being too good for the times in which he lived. Yet Mr ROBISON has charged this upright and humane minister with an exercise of power, which would argue the most extreme depravity. He states *, that there existed in Paris a combination

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* *Proofs of a Conspiracy, &c.* 4th Edit. Note, p. 584.

bination under the direction of the Wits and Philosophers, who used to meet at the house of Baron D'HOLBACH, having for its object the dissection of the brains of living children, purchased from poor parents, in order to discover the principle of vitality. The police, he adds, interposed to put a stop to these bloody experiments, but the authors of them were protected by the credit of TURGOT.

All this is asserted on the authority, it should seem, of some anonymous German publication. I will not enter on the refutation of a calumny with the fabrication of which Mr ROBISON is not chargeable, though culpable without doubt, for having allowed his writings to become the vehicle of it. Truth and justice require this acknowledgment; and, in making it, I think that I am discharging a duty both to Mr ROBISON and myself:—It is a duty to Mr ROBISON, in as much as a concession made by a friend, is better than one extorted by an adversary; it is a duty to myself, because I should feel that I was doing wrong, were I even by silence to acquiesce in a representation which I believed to be so ill-founded and unjust.

The *Proofs of the Conspiracy*, notwithstanding these imperfections, or perhaps on account of them, were extremely popular, and carried the name of the author into places where his high attainments in science had never gained admission for it. In the course of two years, the book underwent no less than four editions. It is a strong proof of the effect on the minds of men produced by the French Revolution; and of the degree in which it engrossed their thoughts, that the history of a few obscure enthusiasts in Bavaria or Wirtemberg, when it became associated with that Revolution, was read in Britain with so much avidity and attention.

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The defects of the evidence were concealed by the prejudices and apprehensions which were then so general. The people of this country were disposed to believe every thing unfavourable to the French nation, but particularly to the philosophers. All might not be equally culpable, but to discriminate between them was not thought of much importance, and it was the simplest, if not the fairest way, to divide the demerit equally among the whole. The rhapsodies of BARRUEL had already prepared the public for such impartial decisions, and had held up every man of genius and talents, from MONTESQUIEU to CONDORCET, as objects of hatred and execration.

But whatever opinion be formed of the facts related in the history of this conspiracy, it is certainly not in the visions of the German Illuminati, nor in the ceremonials of Free-Masonry, that we are to seek for the causes of a Revolution, which has shaken the civilised world from its foundations, and left behind it so many marks, which ages will be required to efface. There is a certain proportionality between causes and their effects, which we must expect to meet with in the moral no less than in the natural world; in the operations of men as well as in the motions of inanimate bodies. Whenever a great mass of mankind is brought to act together, it must be in consequence of an impulse communicated to the whole, not in consequence of a force that can act only on a few. A Hermit or a Saint might have preached a crusade to the Holy Land, with all the eloquence which enthusiasm could inspire; but if a spirit of fanaticism and of chivalry had not pervaded every individual in that age, they would never have led out the armies of Europe to combat before the walls of Jerusalem. Neither could the influence of a small number of religious or philosophic fanatics, sensibly accelerate or retard those powerful causes which prepared from afar the
destruction.

destruction of the French monarchy. When opposed to these causes, such influence was annihilated; when co-operating with them, its effects were imperceptible. It was a force which could only follow those already in action; it was like “dash-
“ing with the oar to hasten the cataract,” or, “waving with
“a fan to give swiftness to the wind*.”

It is, however, much easier to say what were not, than what were, the causes of the French Revolution; and in dissenting from Professor ROBISON, I will only remark in general, that I believe the principal causes to be involved in this maxim, That a certain relation between the degree of Knowledge diffused through a nation, and the degree of Political Liberty enjoyed by it, is necessary to the stability of its government. The knowledge and information of the French people, exceeded the measure that is consistent with the entire want of political liberty. The first great exigency of Government, therefore, the first moment of a weak administration, could hardly fail to produce an attempt to obtain possession of those rights, which, though never enjoyed, can never be alienated. Such an occasion actually occurred, and the revolution which took place was entire and terrible. This also was to be expected; for there seems to be among political institutions, as among mechanical contrivances, two kinds of equilibrium, which, though they appear very much alike in times of quiet, yet, in the moment of agitation and difficulty, are discovered to be very different from one another. The one is tottering and insecure, in so much that the smallest departure from the exact balance leads to its total subversion. The other is stable, so that even a violent concussion only excites some vibrations backward and forward, after which every thing settles in its
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* FERGUSON'S *Essay on Civil Society*, Part III. Sect. 4.

own place. Those governments in which there is no political liberty, and where the people have no influence, are all unavoidably in the first of these predicaments: those in which there is a broad basis of liberty, naturally belong to that in which the balance re-establishes itself. The same weight, that of the people, which in the first case tends to upset the balance, tends in the second to restore it: and hence, probably, the great difference between the result of the French Revolution, and of the revolutions which formerly took place in this country.

It will be happy for mankind, if they learn from these disasters, the great lessons which they seem so much calculated to enforce, and if while the people reflect on the danger of sudden innovation, their rulers consider, that it is only by a gradual reformation of abuses, and by extending, rather than abridging, the liberties of the people, that a remedy can be provided against similar convulsions.

But I return willingly from this digression, to those branches of knowledge, where, in describing what Mr ROBISON has done, the language of truth and of praise will never be found at variance with one another.

In autumn 1799, this country had the misfortune to lose one of its brightest ornaments, Dr BLACK, who had laid the foundation of the Pneumatic Chemistry, and discovered the principle of Latent Heat. The Doctor had published very little; and his discoveries were more numerous than his writings. His lectures, however, had drawn much attention; they presented the first philosophical views of chemical science; they were remarkable for their perspicuity and elegance, and this, joined to the simplicity and gracefulness of manner in which they were delivered, made them universally admired.

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It was now proposed to publish these lectures ; but this required that they should be put into the hands of some one able to perform the part of an editor, and to prepare for the press the notes from which the Doctor used to read his lectures. The person naturally thought of was Mr ROBISON, one of Dr BLACK's oldest friends, and so well skilled in chemistry, that no one could be supposed to execute the work with more zeal or more intelligence. The task, however, was by no means easy. Dr BLACK, with a very large share of talent and genius, with the most correct taste and soundest judgment, with no habits that could dissipate his mind, or withdraw it from the pursuits of science, was less ardent in research, and less stimulated by the love of fame, than might have been expected from such high endowments. A state of health always delicate, and subject to be deranged by slight accidents, was probably the cause of this indifference. Hence the small number of his writings, and his sudden stop in that career of discovery on which he had entered with such brilliancy and success. Of much that he had done, the world had never heard any thing, but from verbal communication to his pupils, and on the subject of latent heat, no written document remained to ascertain to him the property of that great discovery. The only means of repairing this loss, and counteracting the injustice of the world, was the publication which Professor ROBISON now undertook with so much zeal, and executed with so much ability. Dr BLACK had used to read his lectures from notes, and these often but very imperfect, and ranged in order by marks or signs only known to himself. The task of editing them was therefore difficult, and required a great deal both of time and labour, but was at last accomplished in a manner to give great satisfaction. The truth, however, is, that the time was past when this work would have met in the world with the reception

tion which it deserved. Chemical theories had of late undergone great changes, and the language of the science was entirely altered. Dr BLACK, on the subject of these changes, had corresponded with LAVOISIER, and the mutual respect of two great men for one another, was strongly marked in the letters which passed between them. The Doctor had acceded to the changes proposed by the French chemist, and had even adopted the new nomenclature; but his notes had not undergone the alterations which were necessary to introduce it throughout. It would now have been difficult to make those alterations; and Mr ROBISON, who was not favourable to the new chemistry, did not conceive that by making them, he was permanently serving the interest of his friend. He conceived, indeed, that there was unfairness in the means employed by LAVOISIER, for bringing Dr BLACK to adopt the new system of chemistry, and has thrown out some severe reflections on the conduct of the former, which appear to me to rest on a very slight foundation.

It was quite natural for a man, convinced, like LAVOISIER, of the importance of the improvements which he had made in chemistry, to be desirous that they should be received by the most celebrated Professor of that time,—by the very man, too, whose discoveries had opened the way to those improvements. His letters to Dr BLACK, contain expressions of respect and esteem, which, I confess, appear to me perfectly natural, and without any thing like exaggeration or deceit. Indeed it is not probable that M. LAVOISIER, even if he could himself have submitted to flatter or cajole, could conceive that any good effect was to arise from doing so, or that there was any other way of inducing a grave, cautious, and profound philosopher,

losopher, to adopt a certain system of opinions, but by convincing him of their truth? He had, with those who knew him, the character of a sincere man, very remote from any thing like art or affectation. We must therefore ascribe the view which Mr ROBISON took of this matter, to the same system of prejudices on which we have had already occasion to animadvert. Such, indeed, was the force of those prejudices, that he considered the Chemical Nomenclature, the new System of Measures, and the new Kalendar, as all three equally the contrivances of men, not so much interested for science, as for the superiority of their own nation. Now, whatever be said of the Kalendar, the project of uniform Weights and Measures is admitted to be an admirably contrived system, which Britain is now following at a great distance; and the New Nomenclature of Chemistry to be a real scientific improvement, adopted all over Europe. Many of the radical words may depend on false theories, and may of course require to be changed; but though the *matter* pass away, the *form* will remain; the words of the language may perish, but the mould in which the language was cast will never be destroyed*. The Lectures appeared in 1803.

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* The high opinion which Mr ROBISON elsewhere expresses of LAVOISIER, is very remarkable. In his *Astronomy*, published a year after the Lectures, in stating HOOK's anticipation of the Principles of Gravitation, he concludes thus: "It is worthy of remark, that in this clear and candid and modest exposition of a rational theory, HOOK anticipated the discoveries of NEWTON, as he anticipated with equal distinctness and precision, the discoveries of LAVOISIER, a Philosopher inferior perhaps only to NEWTON." (*Elements of Mechanical Philosophy*, p. 285.)

The last of Mr ROBISON's works was one which he had long projected, though he now set about the completion and arrangement of it, for the first time. It was entitled, *Elements of Mechanical Philosophy, being the substance of a course of lectures on that science*. "Mechanical Philosophy" was, with him, a favourite expression; it was understood as synonymous with Natural Philosophy, and included the same branches. The first volume, the only one he lived to finish, included Dynamics and Astronomy, and was published in 1804. It is a work of great merit, and is accessible to those who have no more than an elementary knowledge of the mathematics. The short view of the phenomena prefixed to the Physical Astronomy is executed in a masterly manner. The same may be said, and perhaps even with more truth, of the Physical Astronomy itself; for there are very few of the elementary treatises on that branch of science which can be compared with it, either for the facility of the demonstration, or the comprehensiveness of the plan. The first part is meant to be popular and historical, and is so at the same time that it is philosophical and precise. The work is indeed highly estimable, and is entitled to much more success in the world than it has actually had.

We have already taken notice of Mr ROBISON's illness, with which he had been now afflicted for the long period of nineteen years. His sufferings, though not equal, had been often extremely severe. They had occasionally rendered him unable to discharge his duty in the College, and of late his friend, the Reverend Dr THOMAS MACKNIGHT, had, with great kindness and ability, frequently supplied his place. Against such a continuance of ill health, with so little hopes of recovery as could be entertained for a long time past, hardly any mind could be expected

expected to remain in full possession of activity and vigour. This is the more difficult, as the valuable medicine which alone in such cases can assuage pain, contributes itself at length to weaken the mind, and to destroy its energy. The combat which Mr ROBISON had maintained against these complicated evils, had indeed been wonderfully vigorous and successful, and the last of his works is quite worthy of his days of most perfect health and enjoyment.

The body could not resist so well as the mind. In the end of January 1805, he was suddenly seized with a severe illness, which put an end to his life in the course of forty-eight hours. There was a general disturbance of the system, which, without having the character of any defined disease, exhibited those symptoms of universal disorder which denote a breaking up of the constitution, and never fail to terminate fatally.

On reviewing the whole of his character, and the circumstances of his life, it is impossible not to see in him a man of extraordinary powers, who had enjoyed great opportunities for improvement, and had never failed to turn them to the best account. He possessed many accomplishments rarely to be met with in a scholar, or a man of science. He had great skill and taste in music, and was a performer on several instruments. He was an excellent draughtsman, and could make his pencil a valuable instrument either of record or invention. When a young man, he was gay, convivial, and facetious, and his *vers de société* flowed, I have been told, easily and with great effect. His appearance and manner were in a high degree favourable and imposing; his figure handsome, and his face expressive of talent, thought, gentleness, and good temper.

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When I had first the pleasure to become acquainted with him, the youthful turn of his countenance and manners was beginning to give place to the grave and serious cast, which he early assumed; and certainly I have never met with any one whose appearance and conversation were more impressive than his were at that period.

Indeed his powers of conversation were very extraordinary, and when exerted, never failed of producing a great effect. An extensive and accurate information of particular facts, and a facility of combining them into general and original views, were united in a degree of which I am persuaded there have been few examples. Accordingly, he would go over the most difficult subjects, and bring out the most profound remarks, with an ease and readiness which was quite singular. The depth of his observations seemed to cost him nothing; and when he said any thing particularly striking, you never could discover any appearance of the self-satisfaction so common on such occasions. He was disposed to pass quite readily from one subject to another; the transition was a matter of course, and he had perfectly, and apparently without seeking after it, that light and easy turn of conversation, even on scientific and profound subjects, in which we of this island are charged by our neighbours with being so extremely deficient.

The same facility, and the same general tone, was to be seen in his lectures and his writings. He composed with singular facility and correctness, but was sometimes, when he had leisure to be so, very fastidious about his own compositions.

In the intercourse of life, he was benevolent, disinterested, and friendly, and of sincere and unaffected piety. In his interpretation

terpretation of the conduct of others, he was fair and liberal, while his mind retained its natural tone, and had not yielded to the alarms of the French Revolution, and to the bias which it produced.

His range in science was most extensive ; he was familiar with the whole circle of the accurate sciences, and there was no part of them on which, if you heard him speak or lecture, you would not have pronounced it to be his *fort*, or a subject which he had studied with more than ordinary attention. Indeed, the rapidity with which his understanding went to work, and the extent of ground he seemed to have got over, while others were only preparing to enter on it, were the great features of his intellectual character. In these he has rarely been exceeded. With such an assemblage of talents, with a mind so happily formed for science, one might have expected to find in his writings more of original investigation, more works of discovery and invention. I must remark, however, that from the turn his speculations and compositions took, or rather received from circumstances, we are apt to overlook what is new and original in a great part of them. An article in a Dictionary of Science must contain a System, and what is new becomes of course so mixed up with the old and the known, that it is not easily distinguished. Many of Mr ROBISON'S articles in the *Encyclopædia Britannica* are full of new and original views, which will only strike those who study them particularly, and have studied them in other books. In *Seamanship*, for example, there are many such remarks ; the fruit of that knowledge of principle which he combined with so much experience and observation. *Carpentry*, *Roof*, and many more, afford examples of the same kind. The publication now under the management of Dr BREWS-

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STER, will place his scientific character higher than it has ever been with any but those who were personally acquainted with him. With them, nothing can add to the esteem which they felt for his talents and worth, or to the respect in which they now hold his memory.

END OF THE SEVENTH VOLUME.